United States Patent [19]

Harloff

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[54] **METHOD AND SYSTEM OF CONTROLLING A JET ENGINE FOR AVOIDING ENGINE SURGE**

[75] Inventor: **Gary J. Harloff, Irving, Tex.**

[73] Assignee: **The United States of America as represented by the Secretary of the Air Force, Washington, D.C.**

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[58] Field of Search 235/150.2; 73/116, 117.4; 60/39.27, 39.29, 227; 364/426, 431

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[57] **ABSTRACT**

A jet engine is controlled by placing time variant total pressure probes at the entry plane and the discharge plane of a jet engine fan. The pressure values at the probes are converted into electrical signals, filtered, and then fed to meters where the root-mean-square (RMS) values of the electrical signals are determined. The RMS values are fed to a computer which computes the ratio of the two RMS values and this ratio is fed to a comparison circuit which generates a difference signal representing the difference between the RMS ratio and a predetermined limit value. If the RMS ratio equals the limit value, then the operating point of a fan is altered by either changing the nozzle area, changing the fan speed, or changing the altitude or Mach number.

7 Claims, 6 Drawing Figures